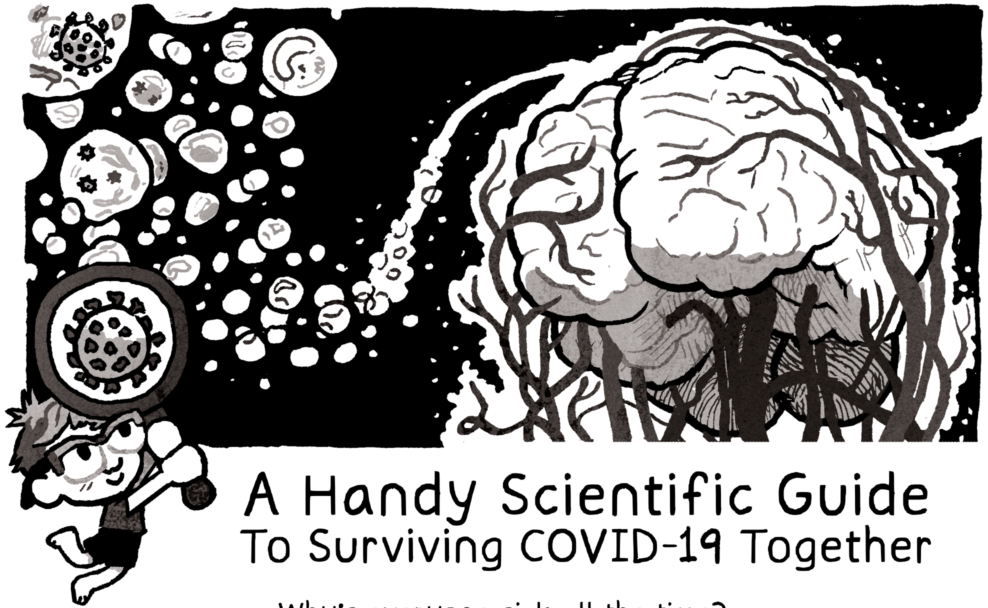


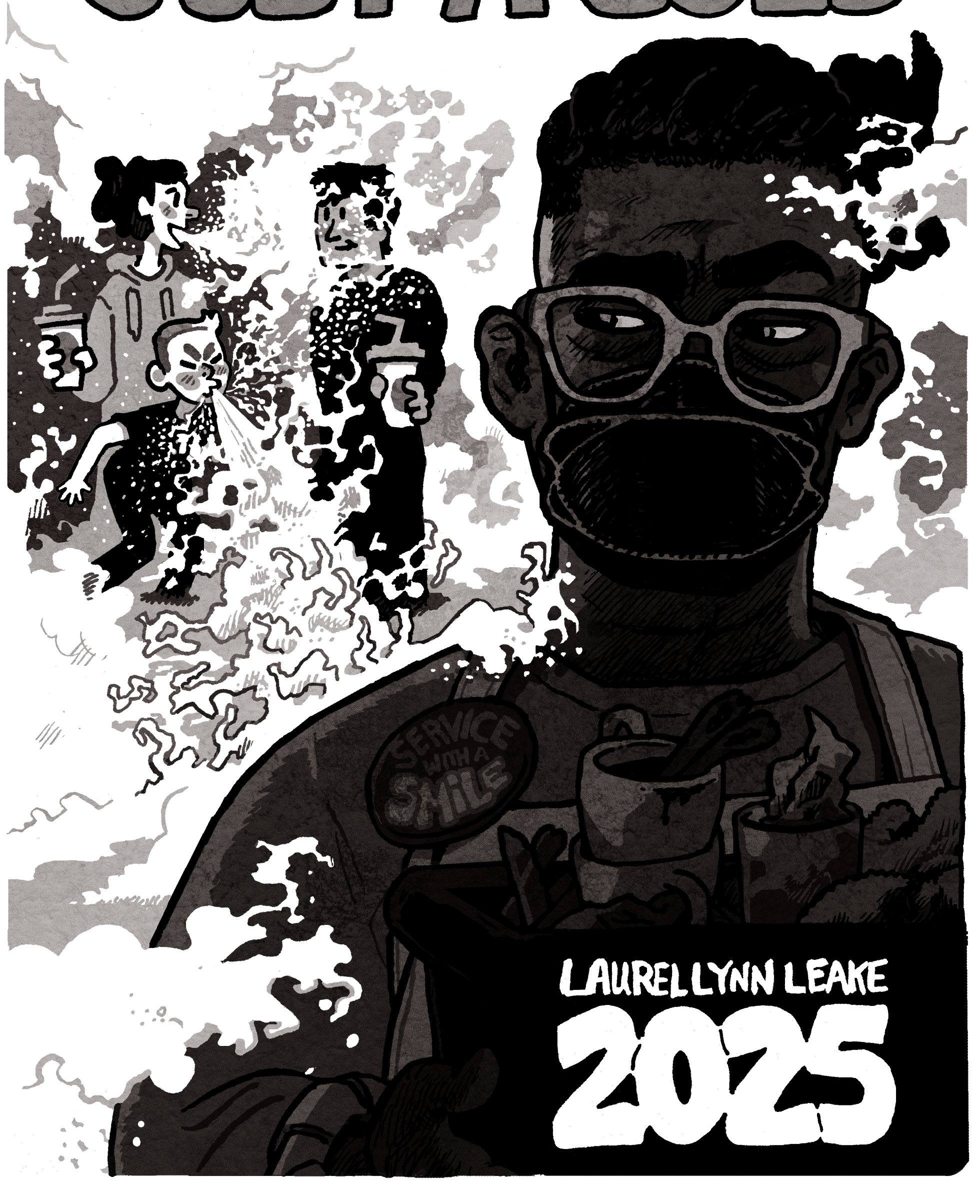
A Handy Scientific Guide
To Surviving COVID-19 Together

Why's everyone sick all the time?
Well, it's not "just a cold" & it's definitely not "mild"...
It's SARS-COV-2, & it can change your life forever.

This 26-pg zine cuts through years of COVID-19 chaos with simple, accessible language & cartoon visuals. Learn how the virus spreads through the air, what it does inside your body when you get infected, and why we mask to protect ourselves and each other.

PLUS: Science illustrations featuring
fat, queer, trans & disabled people of color!
Resources for surviving all these pandemics!
Hopeful words to keep you going!

WHY WE MASK:
IT'S NOT "JUST A COLD"



LAURELLYNN LEAKE

2025

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just credit me, don't substantially change it, and don't use it to make money.

This comic would not exist without my partner Kimball Anderson's hard work and COVID know-how.

Their editing kept the zine going during my RSI flare-ups, and their emotional support got me through it all. Thank you!

I'm also grateful to everyone who gave me zine feedback, with an extra big thank you to Dupe and Caitlin for their copy edits.

Finally, thank you to everyone who's made SARS-CoV-2 research & resources more accessible online, and to everyone fighting to keep each other alive out there.

Laurel Lynn Leake

...is a white, queer, and disabled artist & full-time lump. She's taking care of herself even though it's hard!

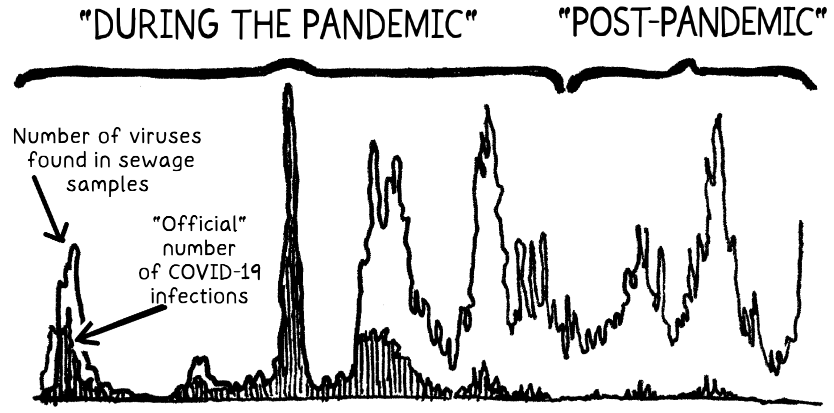
You can find them at:

laurellynnleake.com
laurellynnleake.storenvy.com
laurel-lynn-leake.itch.io
counterintuitivecomics.tumblr.com
patreon.com/counterintuitive

THANK YOU FOR READING

If you stopped masking, let this be the excuse to start again!
And if you never stopped - thank you, thank you, thank you.

Trackers



Source: Santa Clara County Public Health Dept, inspired by Lee Altenberg, PhD.

Wastewater trackers monitor sewage plant samples for viral debris (like SARS-CoV-2, H5N1, RSV, influenza, etc) and then visualize that data by location. They're far more accurate than the deliberately under-counted government and corporate numbers on COVID-19 cases, hospitalizations, and deaths.

However, wastewater numbers do SKEW LOW & have a 2 week delay. Also, since they depend on gov access, most have been forced into removing public data & ignoring all developing pandemics.

Air Quality Index (AQI) trackers don't report viruses, but they're a useful tool for flagging dangerous air conditions that require respirator masks, like wildfires & chemical leaks.

TURTLE ISLAND

aka "North America"

WastewaterScan Dashboard
data.wastewaterscan.org/

"Weather Reports"
on the PeoplesCDC.org/

Canadian Tracker
COVID19Tracker.ca

GLOBAL

KFF Global Tracker
https://t.co/7fmeb93fYI

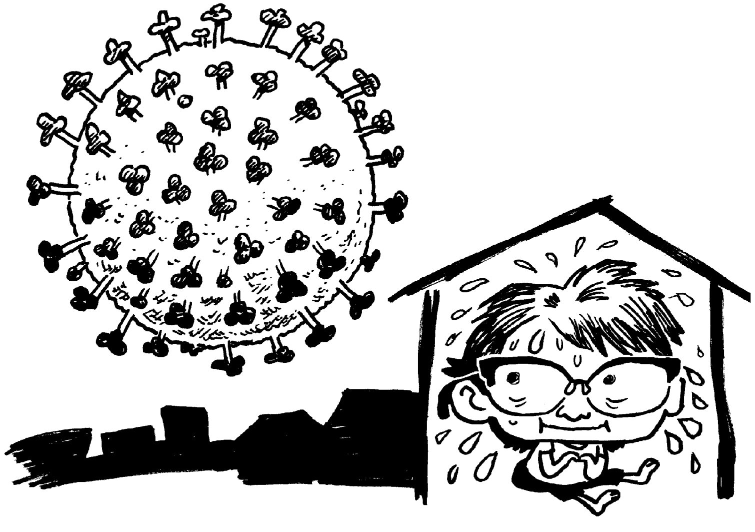
Worldometer
worldometers.info/coronavirus/

IQAir - iqair.com
Air Quality Index, includes fire, wind, & PM 2.5 data.

PurpleAir
map.purpleair.com
Crowd-sourced air quality data.

WHY WE MASK: IT'S NOT "JUST A COLD"

A Handy Scientific Guide To Surviving COVID-19 Together



featuring ME! ↗

Works Cited

Flip to page 22-24 for the endnotes.
For a web version with working URLs, use the link or QR below. You can also download the zine to print your own copies to share!

LaurelLynnLeake.com/WhyWeMask

By the way! I am not a doctor or scientist, and this zine is not meant as a replacement for medical care. It's all based on free-to-read, peer-reviewed scientific papers, but since I cartoonified everything for clarity, the illustrations aren't perfectly to scale.

Guides & Tools

Resources for currently sick people:
COVID-Conscious Solidarity Database - tinyurl.com/currentlysick
Find COVID-19 Medications (USA) - treatments.hhs.gov/
Drug Interaction Checker - Covid19-DrugInteractions.org/checker
COVID Safe Providers - covidsafeproviders.com/
Treatment Research - C19early.org/

Resources for long-term disability & chronic illness:
Long COVID Physio - LongCovid.physio/pacing/
Long COVID Justice - longcovidjustice.org/ (English/Español)
How to Get On by Lily Silver -HowToGetOn.wordpress.com/
A self-advocacy guide for homebound/bedbound people in the USA.

Protections that aren't masks:
Clean Air Crew
CleanAirCrew.org/

We Have The Tools
wehavethetools.neocities.org/

HOCl Water Info
t.co/w14EN05F4X
ko-fi.com/sarssafesocials/
Viv's DIY guide, virtual workshops, & kits for making HOCl water, a cheap antiviral & antibacterial cleaner.

Resources for buying & adjusting masks for your face shape:
Mask Database - tinyurl.com/maskdb
Respirator Repository - tinyurl.com/PDXMaskLibrary
Buy Lower Cost Masks (USA) - linktr.ee/buymasks
Masking Through Blackness by Sabrina Sims- starlybri.itch.io

Combating misinformation with research:
How To Talk To Your Loved Ones About COVID - covid.tips/
LitCOVID - ncbi.nlm.nih.gov/research/coronavirus/

MASK UP, WE NEED YOU: Palestinian Solidarity, COVID-19, & the Struggle For Liberation by Rimona Eskayo & Sheyam Ghieth
rimoskyo.com/shop/, sheyamghieth.com/shop

What's Up With COVID & How To Protect Yourself
by Hazel Newlevant - newlevant.com/COVIDzine (English/Español)

We Keep Each Other Safe -
ForwardTogether.org/tools/we-keep-each-other-safe/ (English/Español)
Visual guide "By & For Black, Indigenous, Latinx, POC & LGBTQ Communities"

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PAGE 15: LONG COVID SYMPTOMS THROUGH THE BODY

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PAGE 16: THE DAMAGE GETS WORSE W/ EVERY INFECTION

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PAGE 18: STOPPING THE SPREAD (SWISS CHEESE MODEL)

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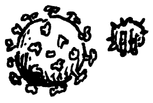


THE BASICS:

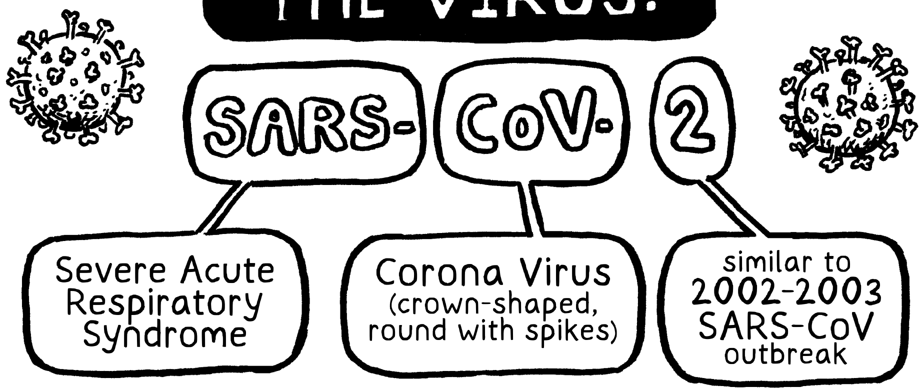
COVID-19 is an illness caused by the virus SARS-CoV-2, and mainly spreads through the air.[1]

A single infection, even one that seems "mild", can cause severe damage throughout your body. What's worse, each new infection risks new damage to your brain, immune system, lungs, heart, and more, and can add up to permanent disabilities or death.[2]

Right now, at least 75% of all adults[3] (and 30% of children[4]) are at a high risk for catching severe infections that could hospitalize or even kill us.

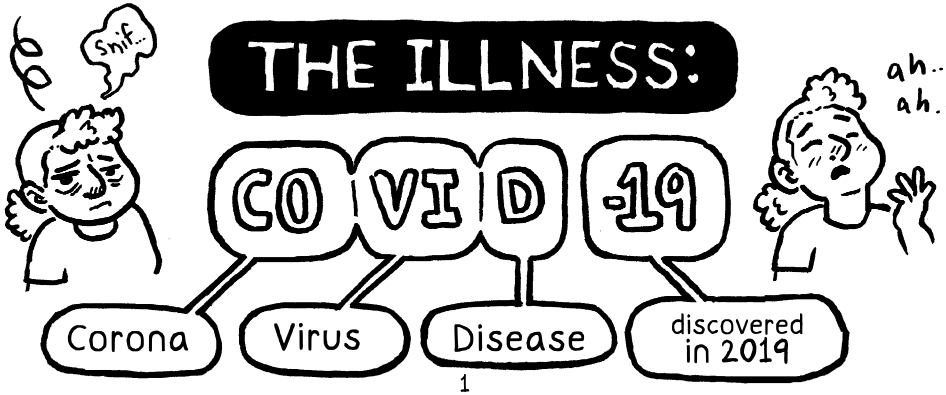
And if you have EVER had COVID-19, even once, YOU are now officially high risk too.

THE VIRUS:

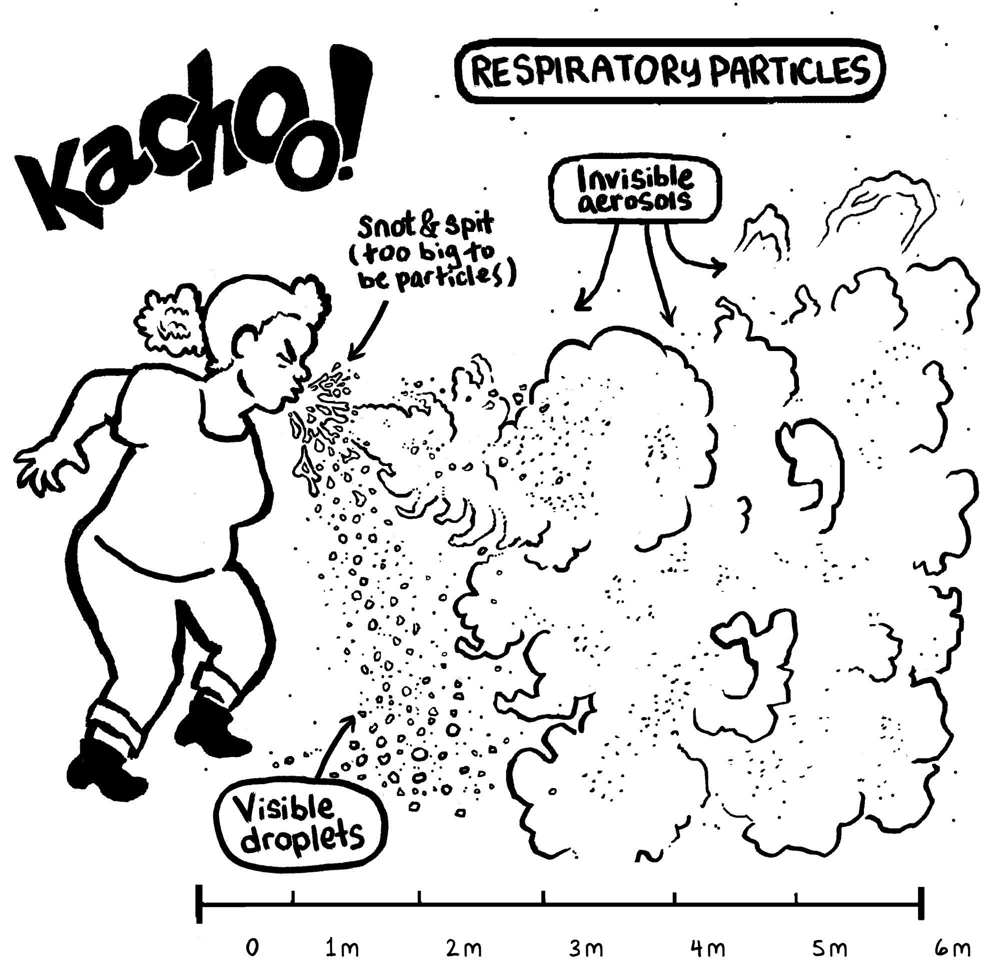


SARS-
CoV-
2
Severe Acute Respiratory Syndrome
Corona Virus (crown-shaped, round with spikes)
similar to 2002-2003 SARS-CoV outbreak

THE ILLNESS:



COVID-19 is an AIRBORNE ILLNESS.[5]



It spreads when infected people exhale clouds of mostly invisible RESPIRATORY PARTICLES carrying hidden viruses. RPs are the tiny drops of fluid that shoot out of our mouths whenever we cough, sneeze, talk, or even breathe.

If you're infected and contagious, you can breathe out enough virus to infect others in just 20 seconds![6] And in places with no fresh air or ventilation, the tiniest RPs can float around like smoke for HOURS.[7,8]

PAGE 6: HOW COVID SPREADS (1: INHALATION)

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PAGE 7: HOW COVID SPREADS (2: DIRECT 3: INDIRECT)

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PAGE 2: COVID-19 IS AN AIRBORNE ILLNESS

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PAGE 3: WHAT'S INSIDE A RESPIRATORY PARTICLE?

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PAGE 4: SYMPTOMS

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PAGE 5: SEVERE SYMPTOMS

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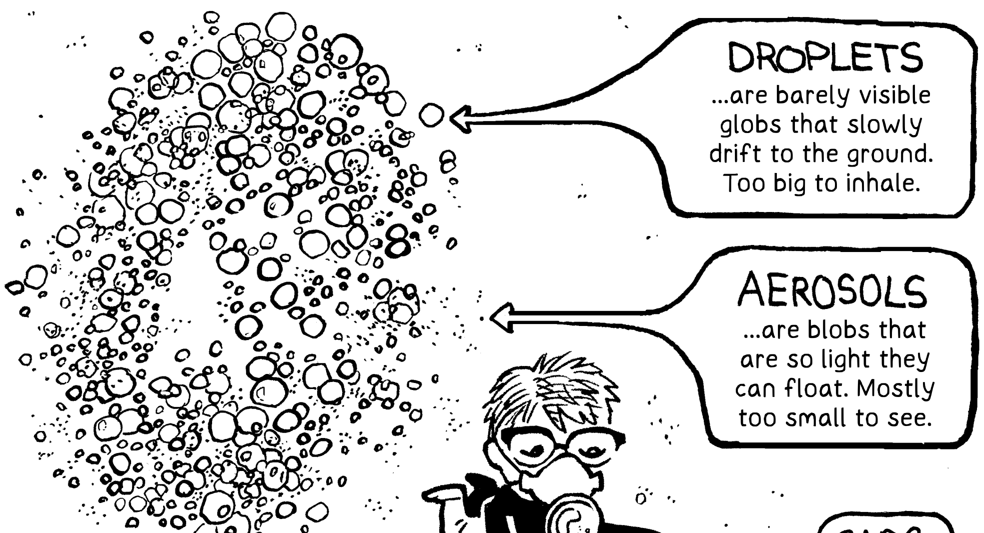
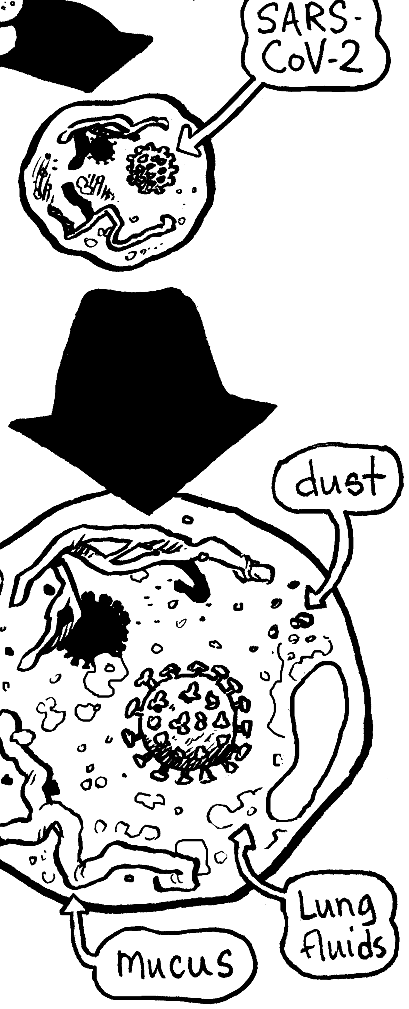

DROPLETS
...are barely visible globs that slowly drift to the ground. Too big to inhale.
AEROSOLS
...are blobs that are so light they can float. Mostly too small to see.

What's inside a respiratory particle?



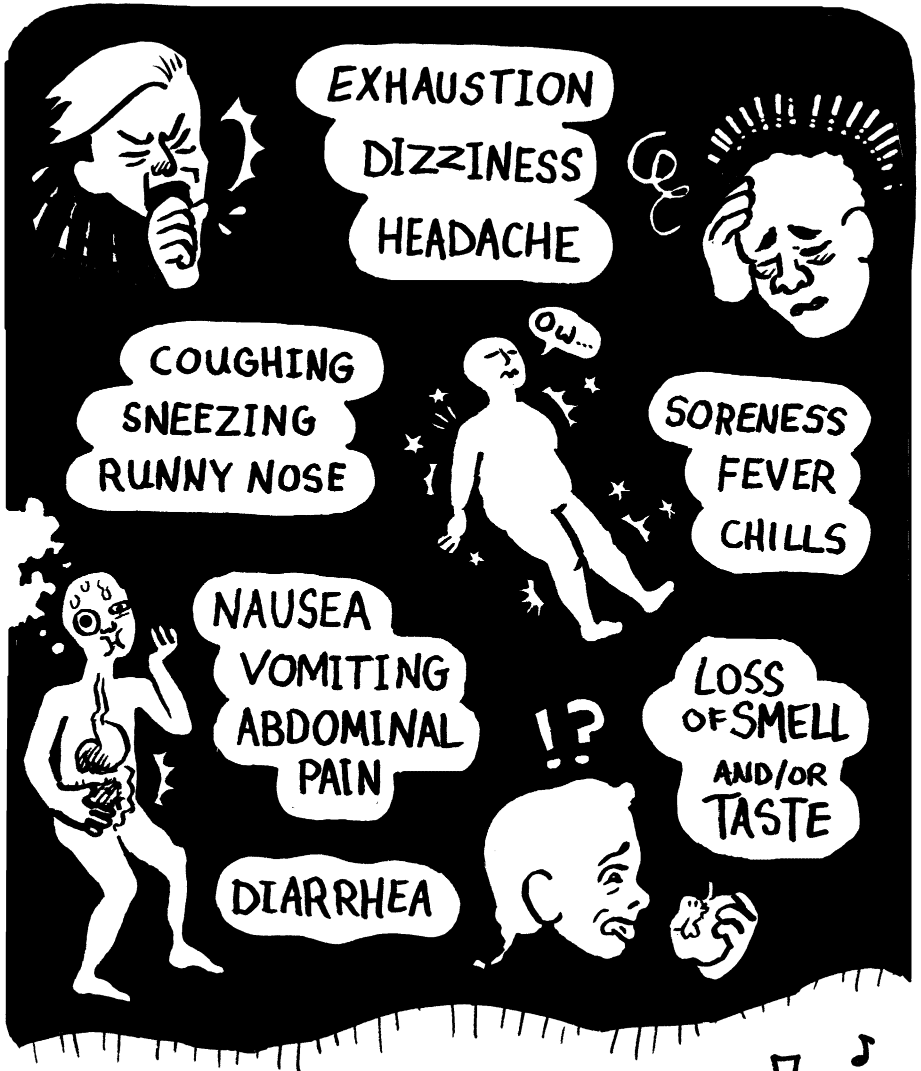
RPs form out of the fluids that naturally line your lungs, throat, & mouth, including sticky mucus. They also pick up junk like dust, bacteria, & viruses like SARS-CoV-2[9].

AEROSOLS, the smallest type of RPs, are actually the most dangerous. We all need to breathe, & they're hiding in the air all around us!

While heavy DROPLETS fall fast & smash into things in seconds, aerosols can drift invisibly for hours until inhaled by someone new. That means more of their viral passengers survive the trip through the air to infect you.[10,11]

SYMPTOMS

SARS-CoV-2 symptoms start about 3-6 days after infection, and last about 12-14 days.[12] This initial or acute infection stage is more commonly called COVID-19. Symptoms and contagiousness differ by viral variant, but often include...[13]


EXHAUSTION
DIZZINESS
HEADACHE
COUGHING
SNEEZING
RUNNY NOSE
OW...
SORENESS
FEVER
CHILLS
NAUSEA
VOMITING
ABDOMINAL PAIN
!?
LOSS OF SMELL AND/OR TASTE
DIARRHEA

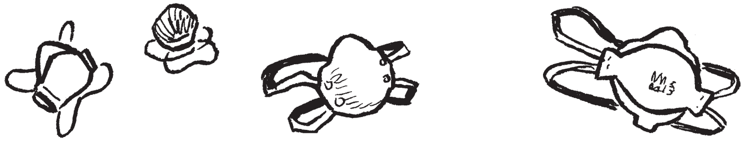
Then again, you could be one of the 32-50% of people with COVID-19 who are...[14, 15]

CONTAGIOUS WITH NO SYMPTOMS

RESOURCES

Includes my ENDNOTES with all works cited, plus useful GUIDES & TOOLS. For a web version with working URLS, use the link or scan the QR code below:

LaurelLynnLeake.com/WhyWeMask

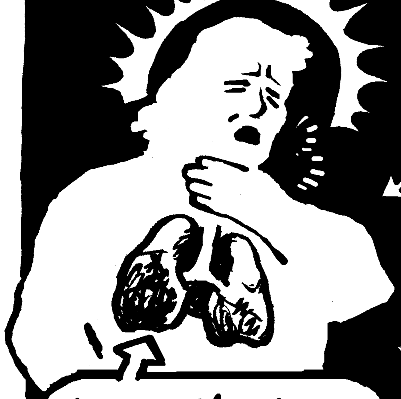


Just like how masks work
better when more of us wear them,
when we come together - locally & globally -
we keep each other safe.

We mask because we refuse
to accept a world where
any of us are disposable.

We fight for a future
with room for all of us.

⚠ SEVERE SYMPTOMS ⚠



STRAINED AND/OR RAPID BREATHING, WHEEZING

CHEST PAIN AND/OR PRESSURE

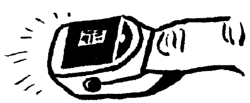
PNEUMONIA (fluid in the lungs)

HYPOXEMIA

COVID-19 can impair O_2 flow to your blood, even w/o obvious breathing issues.

LOW BLOOD OXYGEN symptoms can cause organ failure and even death without treatment.

Measure BLOOD OXYGEN LEVELS at home with a PULSE OXIMETER:



91-94% = concerning
90% and under = emergency!!

WARNING: Oximeters may give FALSELY HIGH READINGS to people with dark skin &/or painted nails.[16]

Hypoxemia symptoms include:

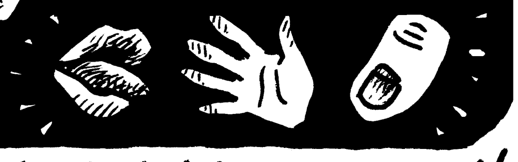
CONFUSION OR DISORIENTATION

INABILITY TO WAKE UP OR STAY AWAKE

CYANOSIS

PALE, GREY, or BLUE-TINTED TONGUE, LIPS, &/or NAILBEDS, depending on skintone.[17]

RACING HEART

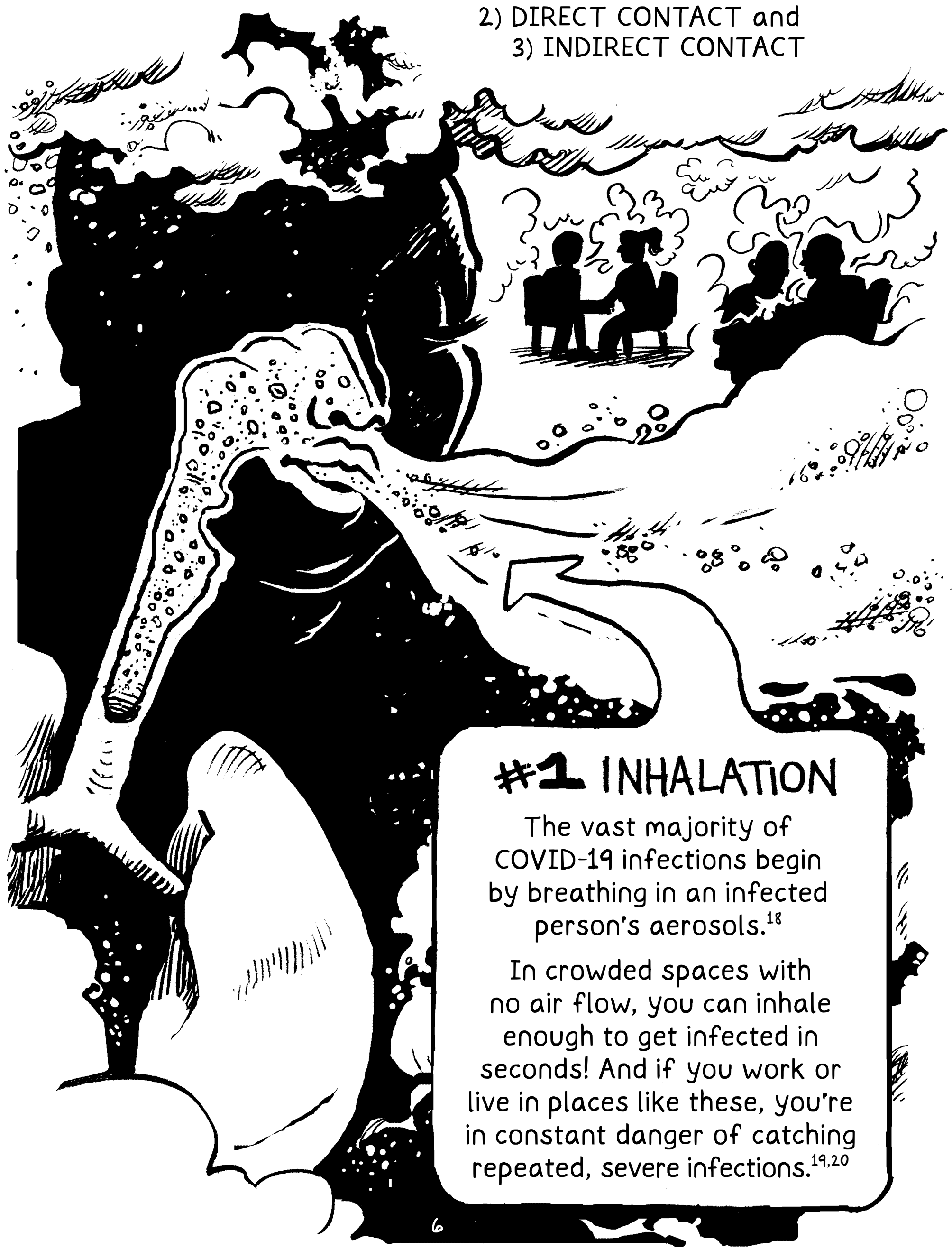


ALL THESE REQUIRE EMERGENCY HOSPITALIZATION!

HOW COVID SPREADS

Respiratory particles carrying SARS-CoV-2 usually enter our bodies in one of three ways:

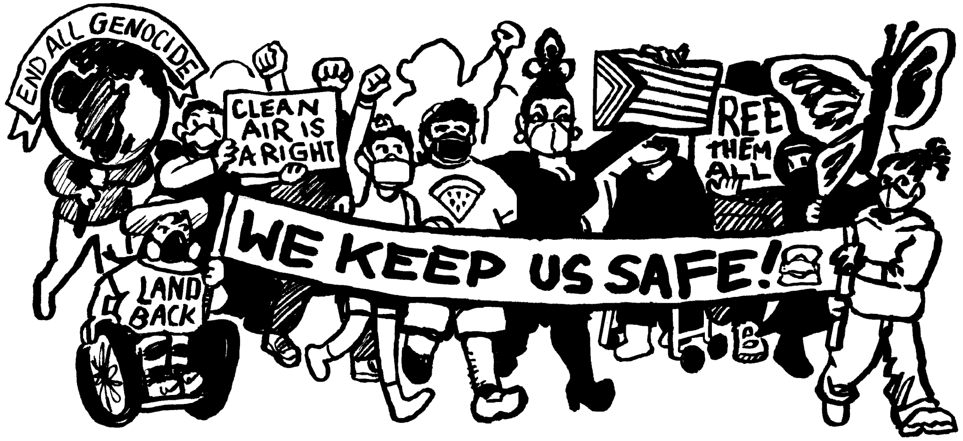
1) INHALATION,
2) DIRECT CONTACT and
3) INDIRECT CONTACT



#1 INHALATION

The vast majority of COVID-19 infections begin by breathing in an infected person's aerosols.[18]

In crowded spaces with no air flow, you can inhale enough to get infected in seconds! And if you work or live in places like these, you're in constant danger of catching repeated, severe infections.[19,20]



COMMUNITY CARE

To survive pandemics, we must follow the lead of Disability Justice and survive TOGETHER.

That means all of us:
The infants and toddlers too young to mask,
the disabled, the chronically ill, and the neurodiverse,
Black and Indigenous people and all people of color,
queer and trans and intersex people, sex workers,
pregnant people, immunocompromised people,
the undocumented, the unhoused, the invisible,
the incarcerated and institutionalized...

People forced into constant exposure at home, work, and school until they've lost count of infections, people forced into indefinite isolation because one infection could kill them or permanently change their life for the worse, people who get fired when they run out of sick days and then evicted when they run out of money...

Everyone abused by our medical industry and abandoned by our governments,

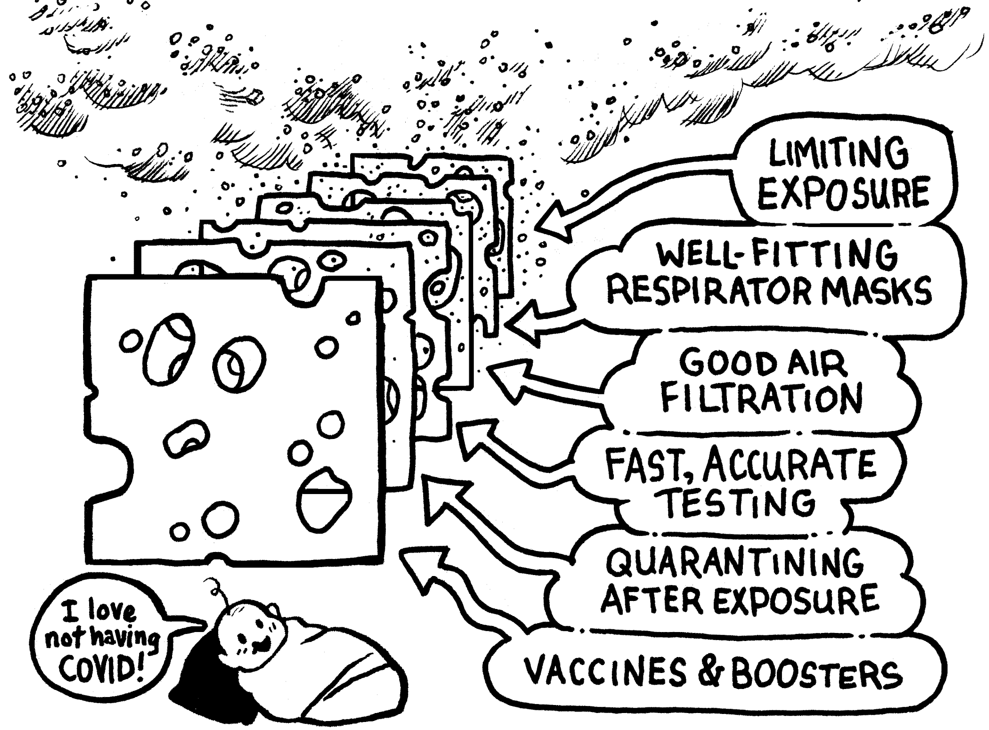
ALL OF US.

STOPPING THE SPREAD

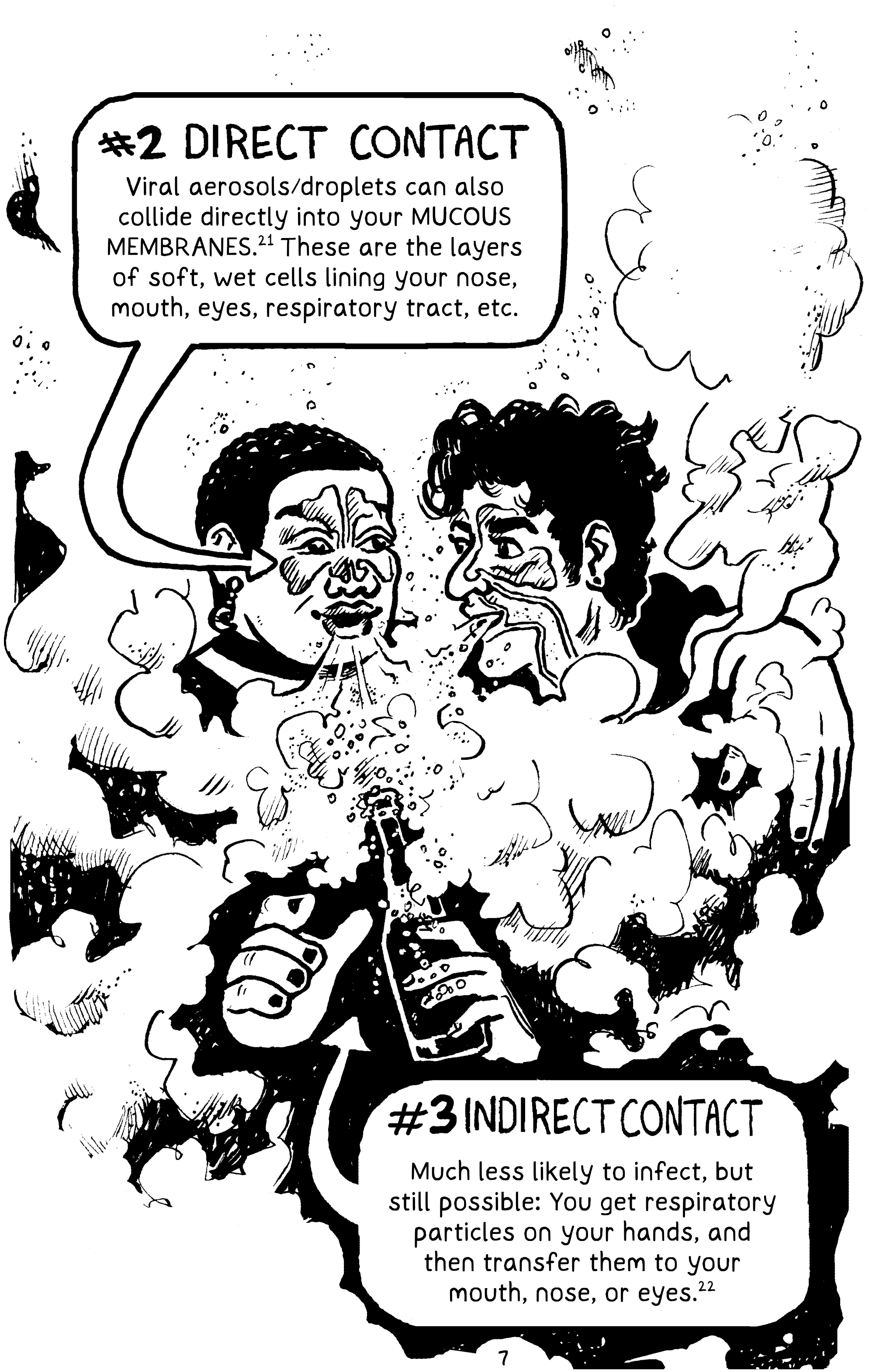
So obviously we want to stop constantly getting sick, but how? We can't end pandemics through individual action alone.

So we work together!
And we combine many strategies, both individual and systemic.

The SWISS CHEESE MODEL OF INFECTION PREVENTION is an easy, cheesy way to visualize this tactic.[59]


LIMITING EXPOSURE
WELL-FITTING RESPIRATOR MASKS
GOOD AIR FILTRATION
FAST, ACCURATE TESTING
QUARANTINING AFTER EXPOSURE
VACCINES & BOOSTERS
I love not having COVID!

Just like how every Swiss cheese slice has holes, no single protection method against SARS-CoV-2 works 100% perfectly. So we stack together methods until we've covered up all the holes, and maximized protection!



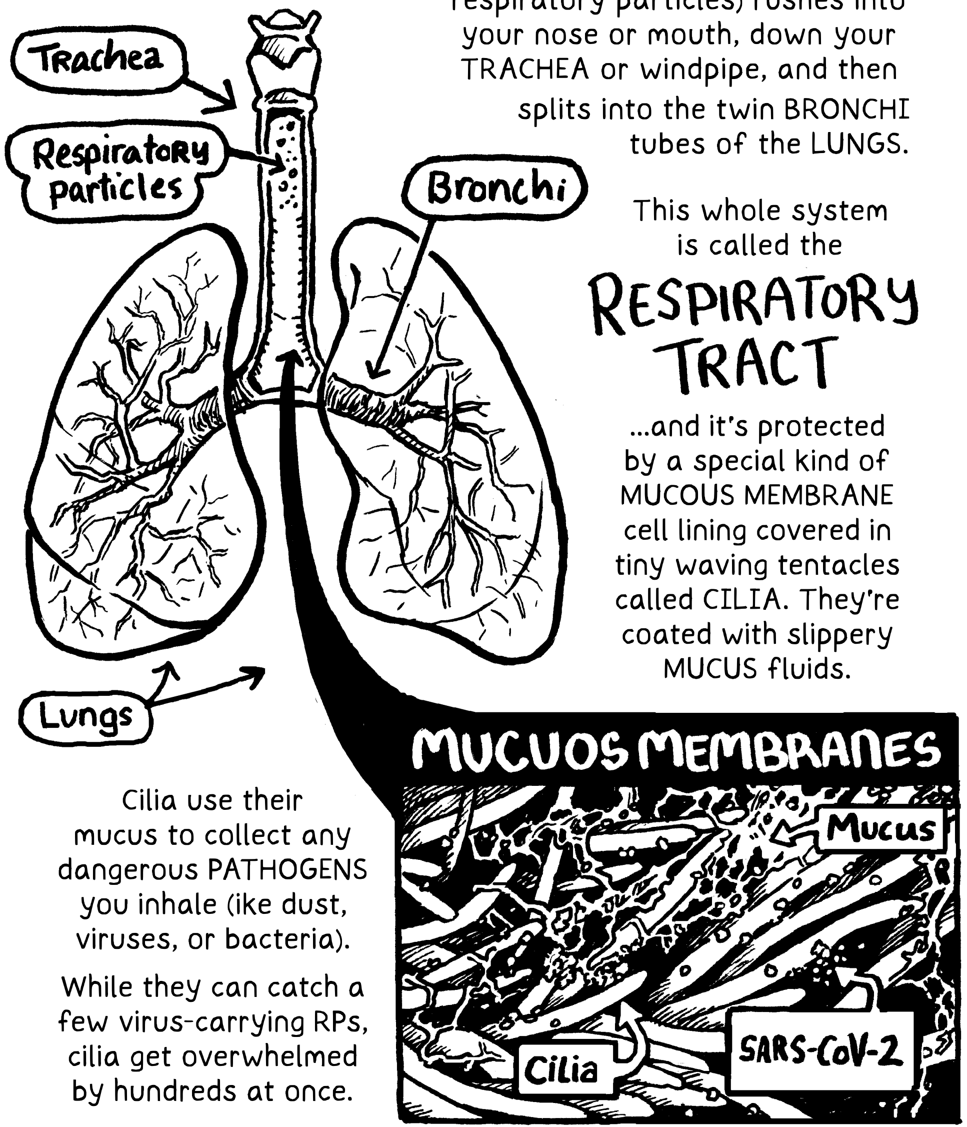
#2 DIRECT CONTACT

Viral aerosols/droplets can also collide directly into your MUCOUS MEMBRANES.[21] These are the layers of soft, wet cells lining your nose, mouth, eyes, respiratory tract, etc.

#3 INDIRECT CONTACT

Much less likely to infect, but still possible: You get respiratory particles on your hands, and then transfer them to your mouth, nose, or eyes.[22]

When you breathe in...


Trachea
Respiratory particles
Bronchi
Lungs
MUCUOS MEMBRANES
Mucus
Cilia
SARS-CoV-2

...air (including any nearby respiratory particles) rushes into your nose or mouth, down your TRACHEA or windpipe, and then splits into the twin BRONCHI tubes of the LUNGS.

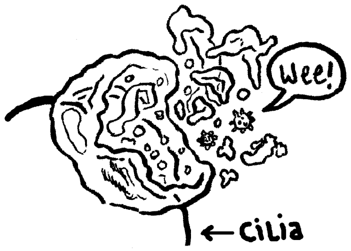
This whole system is called the

RESPIRATORY TRACT

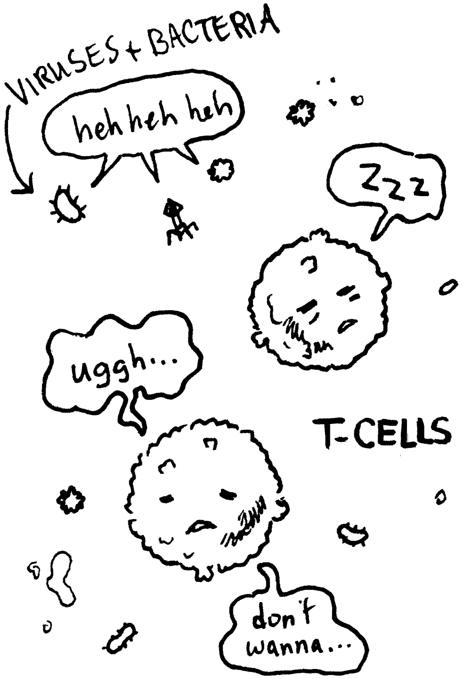
...and it's protected by a special kind of MUCOUS MEMBRANE cell lining covered in tiny waving tentacles called CILIA. They're coated with slippery MUCUS fluids.

Cilia use their mucus to collect any dangerous PATHOGENS you inhale (ike dust, viruses, or bacteria).

While they can catch a few virus-carrying RPs, cilia get overwhelmed by hundreds at once.



RPs dissolve inside the warm, wet respiratory tract, & their viral passengers break free! SARS-CoV-2 attack nearby cells, in the "initial phase" of a new COVID-19 infection.[23]


VIRUSES + BACTERIA
heh heh heh
Zzz
uggh...
T-CELLS
don't wanna...

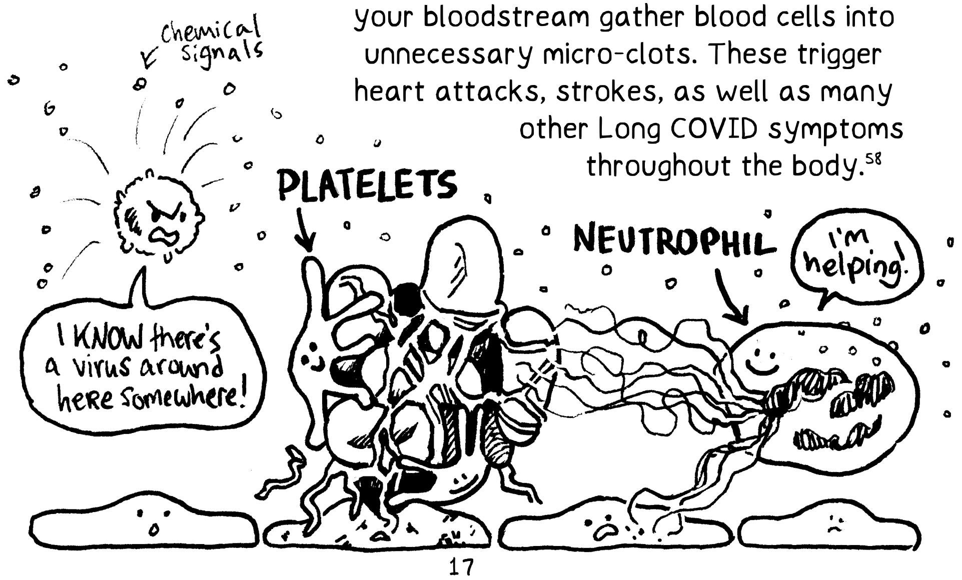
IMMUNE SYSTEM DYSFUNCTION

COVID-19 infections can leave your immune system depleted and unable to fight off much of anything.[55]

Exhausted immune cells called T-CELLS can miss invading pathogens like bacteria or other viruses. They might even "reset" and forget how to handle infections they've fought off before.[56]

COVID-19 infections can also leave you with a fired up immune system in constant high alert against your own body (aka AUTOIMMUNITY). Your T-cells and NEUTROPHILS may attack healthy cells & cause systemic inflammation, especially when triggered by old viral debris.[57]

Meanwhile, overactive PLATELETS in your bloodstream gather blood cells into unnecessary micro-clots. These trigger heart attacks, strokes, as well as many other Long COVID symptoms throughout the body.[58]

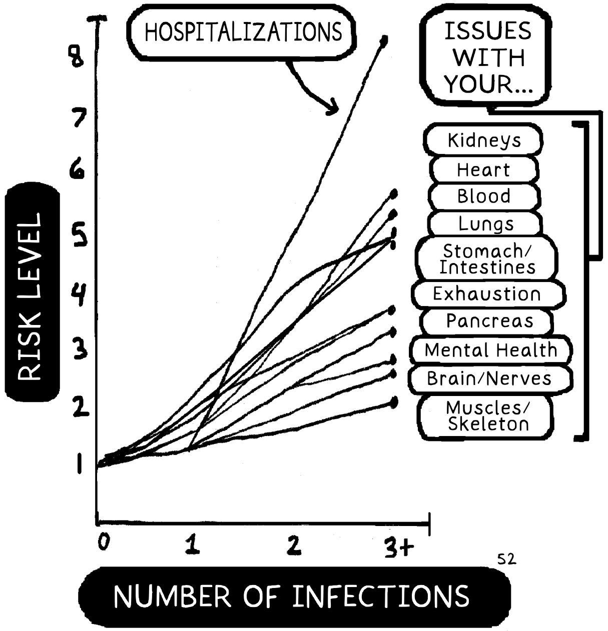

Chemical Signals
I KNOW there's a virus around here somewhere!
PLATELETS
NEUTROPHIL
I'm helping!

THE DAMAGE GETS WORSE WITH EVERY NEW INFECTION

Most people don't know that SARS-CoV-2 damage is CUMULATIVE.

That means every new infection you get raises the odds you'll be hit by horrible new health complications that may become permanent.[49,50]

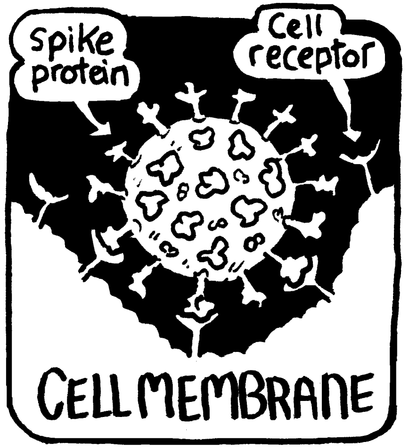
Even infections that feel like "just a cold" or "just allergies" can cause you health trouble immediately or down the line.[51]



An easy or entirely asymptomatic initial infection may even mean your immune system barely activated to fight off the virus. Long after you recover from the "mild" symptoms, the inactive viral debris from the infection can remain hidden throughout your body.[53]

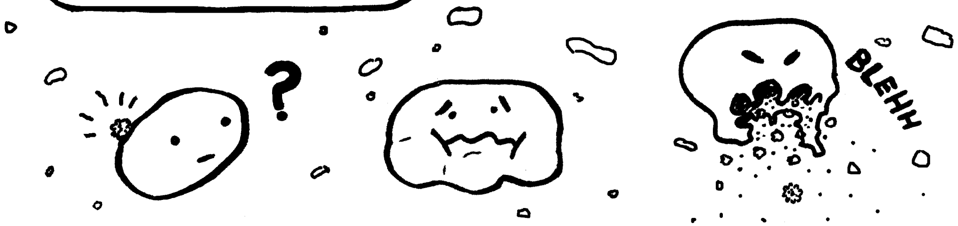
FDG-PET scan showing spike proteins in joints & blood vessels[54]

These are VIRAL RESERVOIRS: Leftover virus chunks & spike proteins that collect in your muscles, bones, & organs, ready to reinfect you whenever your immune system gets stressed.



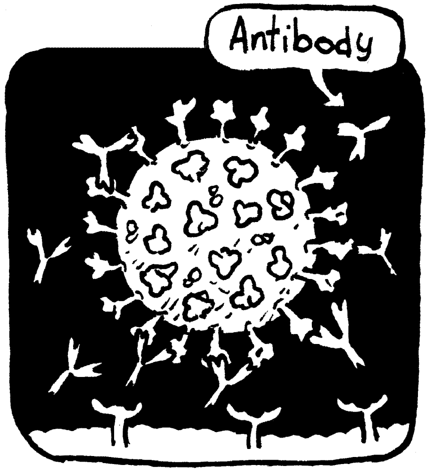
SARS-CoV-2 uses its SPIKE PROTEINS like lockpicks on cells' outer membranes, tricking them into opening and letting the virus inside.

It then re-program the host cells to pump out new copies of SARS-CoV-2. The infected cells swell with copies until they burst, scattering the virus all over their healthy cell neighbors.[24]



VACCINES

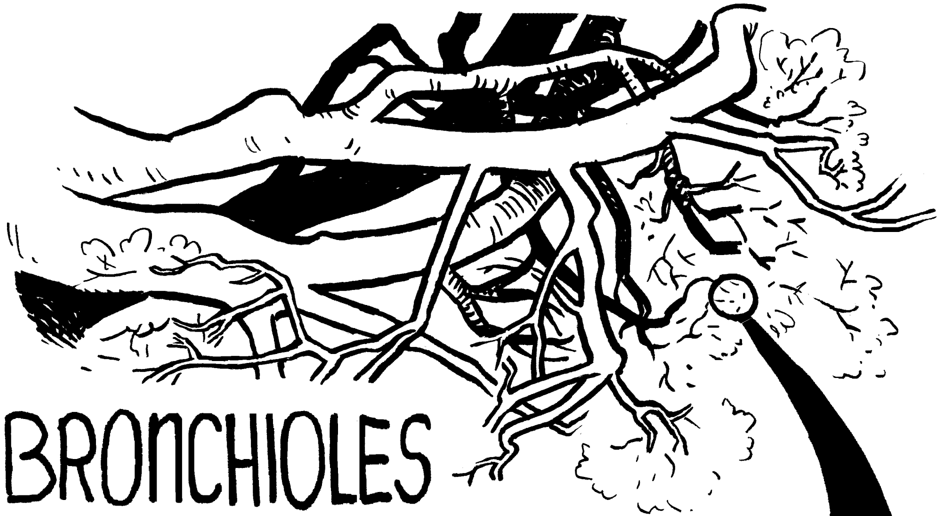
Most COVID-19 vaccines teach our immune systems to create defensive ANTIBODIES. These specialized proteins lock onto SARS-CoV-2's lockpick spikes to make them useless.



While antibodies don't block every single virus in your body, they help a lot - vaccinated people have far better chances of surviving initial infections.[25]

But after 6 yrs of unchecked spread, we're now dealing with dangerous VIRAL VARIANTS. These SARS-CoV-2 mutations (like Delta/Omicron/FLiRT/JN.1) have fancy spike proteins that old antibodies simply don't fit![26]

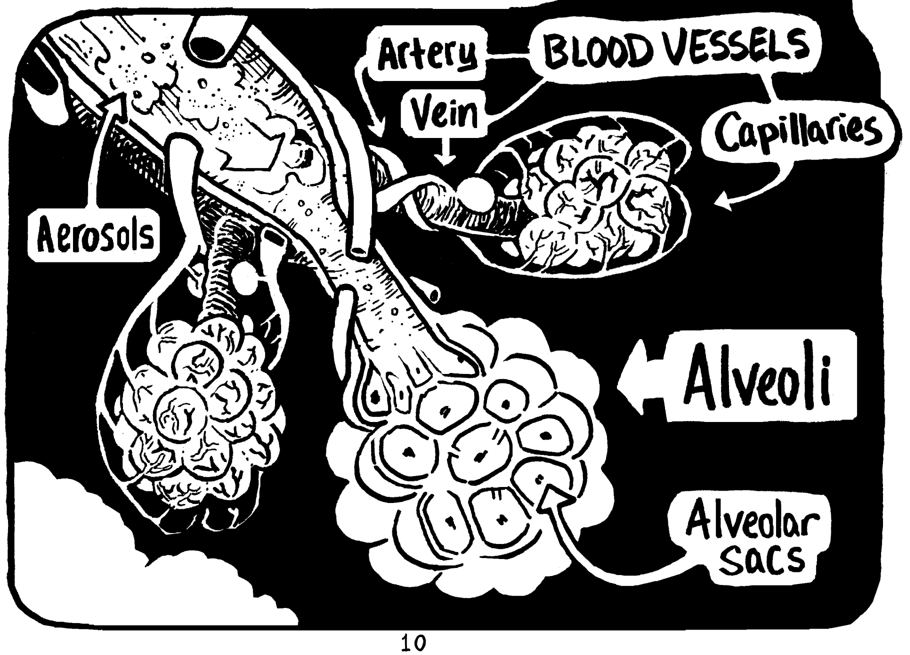
So scientists race to keep up with yearly booster vaccines that can block the latest viral variants with new antibodies.



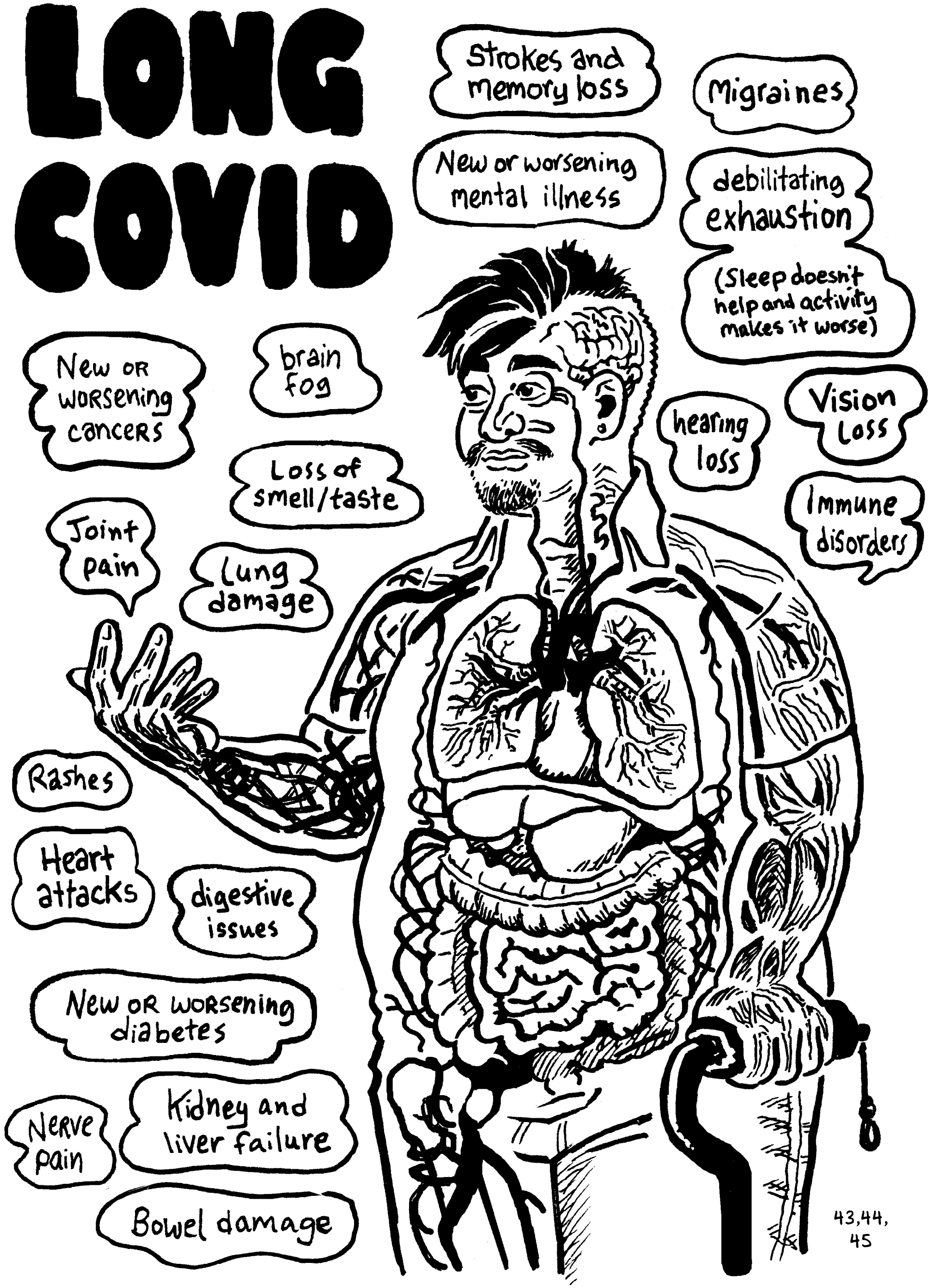
BRONCHIOLES

Once air reaches the lungs, it flows into the BRONCHIAL TREE, where the twin BRONCHI airways split into smaller & smaller twig-like BRONCHIOLES intertwined with BLOOD VESSELS, the ARTERIES & VEINS that carry blood cells to & from the heart.

Each bronchiole is tipped with ALVEOLI, clusters of flexible ALVEOLAR SACS that look sort of like grapes. These clusters are wrapped in nets of CAPILLARIES, the tiniest, most delicate type of blood vessel.

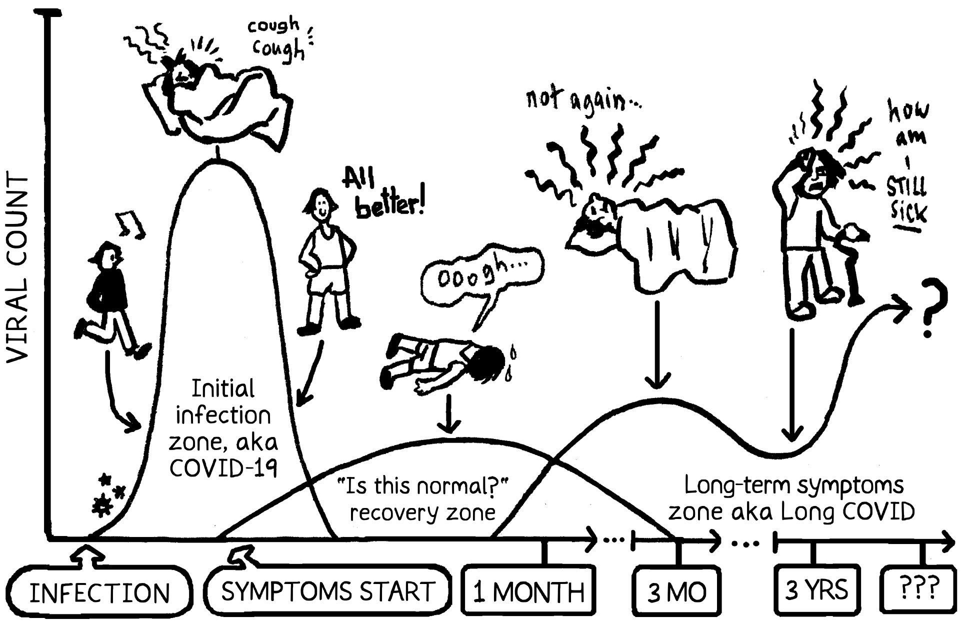

Artery
BLOOD VESSELS
Vein
Capillaries
Aerosols
Alveoli
Alveolar Sacs

LONG COVID


Strokes and memory loss
Migraines
New or worsening mental illness
debilitating exhaustion
(Sleep doesn't help and activity makes it worse)
New or worsening cancers
brain fog
hearing loss
Vision Loss
Loss of smell/taste
Joint pain
Lung damage
Immune disorders
Rashes
Heart attacks
digestive issues
New or worsening diabetes
Nerve pain
Kidney and liver failure
Bowel damage
43,44,45

As of 2025, we keep discovering new ways SARS-CoV-2 damages the body long-term, but we still don't have a "cure". There are many ways to treat the symptoms (primarily serious, extended REST[46,47,48]), but no silver bullet to reverse damage.

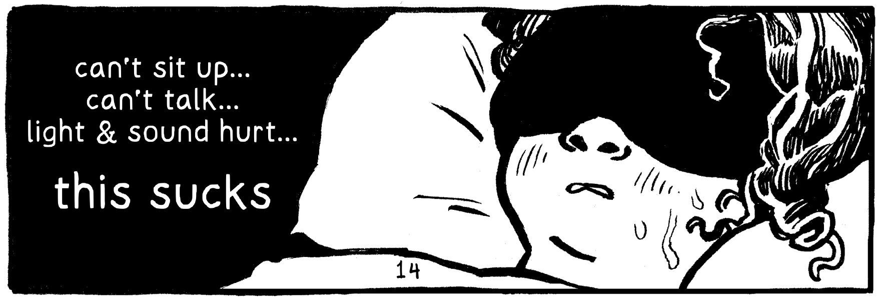
LASTING EFFECTS



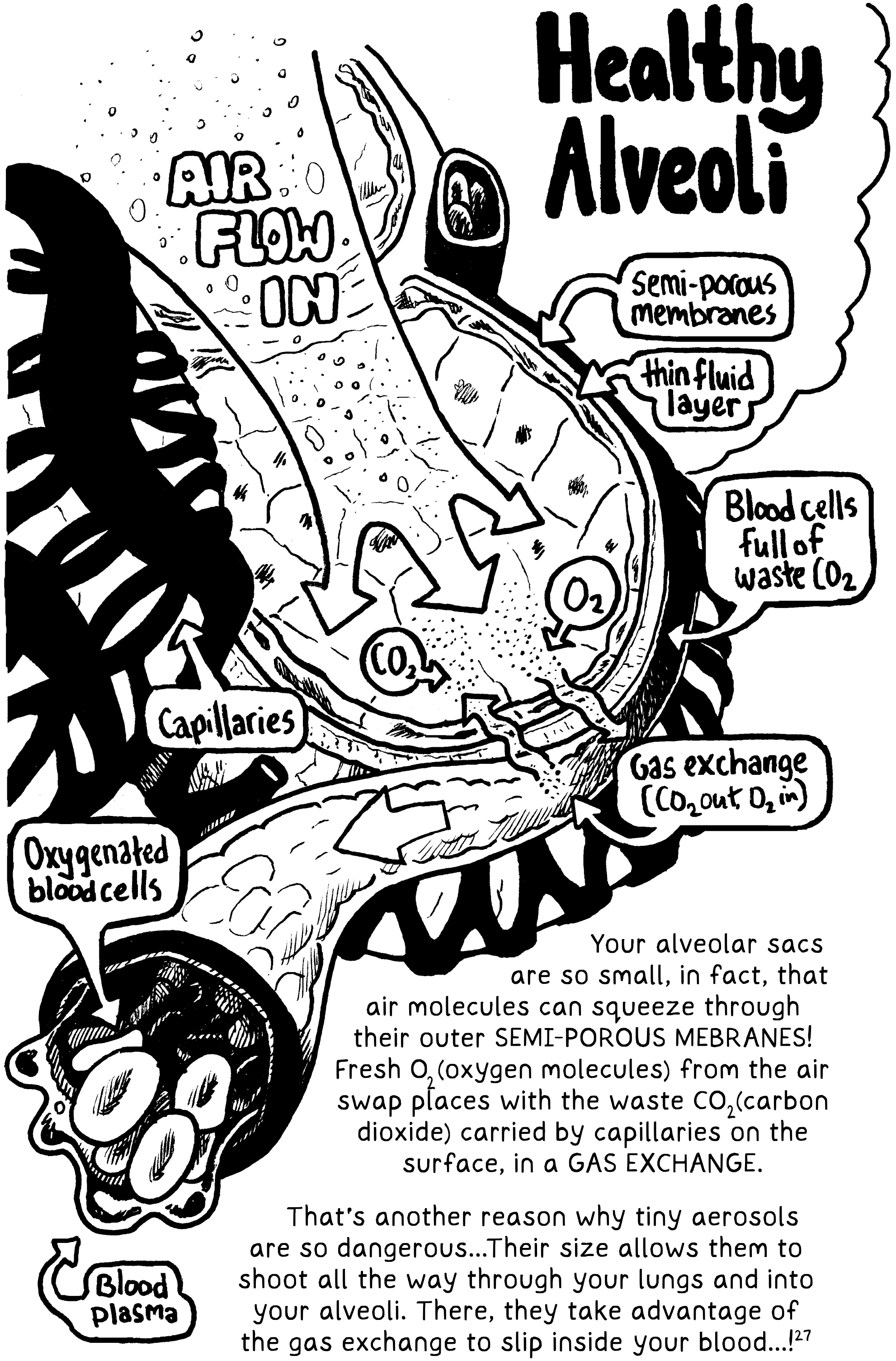
At least 10-30% of people who survive COVID-19 report symptoms reappearing months or even YEARS later. That's 10-30% of ALL adults, of all ages and backgrounds.[36,37,38] Millions have had their lives changed for the worse, with no end in sight.

Long COVID (aka POST-COVID SYNDROME or POST-ACUTE SEQUELAE OF SARS-COV-2) varies wildly from person to person, but common symptoms include difficult coughs, strokes, heart attacks, immune dysfunction, & debilitating exhaustion. We're only just beginning to understand it as a POST-VIRAL ILLNESS, like Shingles (caused by the Chickenpox virus) & AIDS (caused by HIV).

COVID vaccines lower the likelihood of long-term damage, but don't prevent it entirely.[39] Long COVID also hits marginalized people the hardest, and we often go undiagnosed and untreated due to systemic bigotry in healthcare.[40,41,42]


can't sit up...
can't talk...
light & sound hurt...
this sucks

Healthy Alveoli


AIR FLOW IN
Semi-porous membranes
thin fluid layer
Blood cells full of waste CO_2
O_2
CO_2
Capillaries
Gas exchange (CO_2 out, O_2 in)
Oxygenated blood cells
Blood plasma

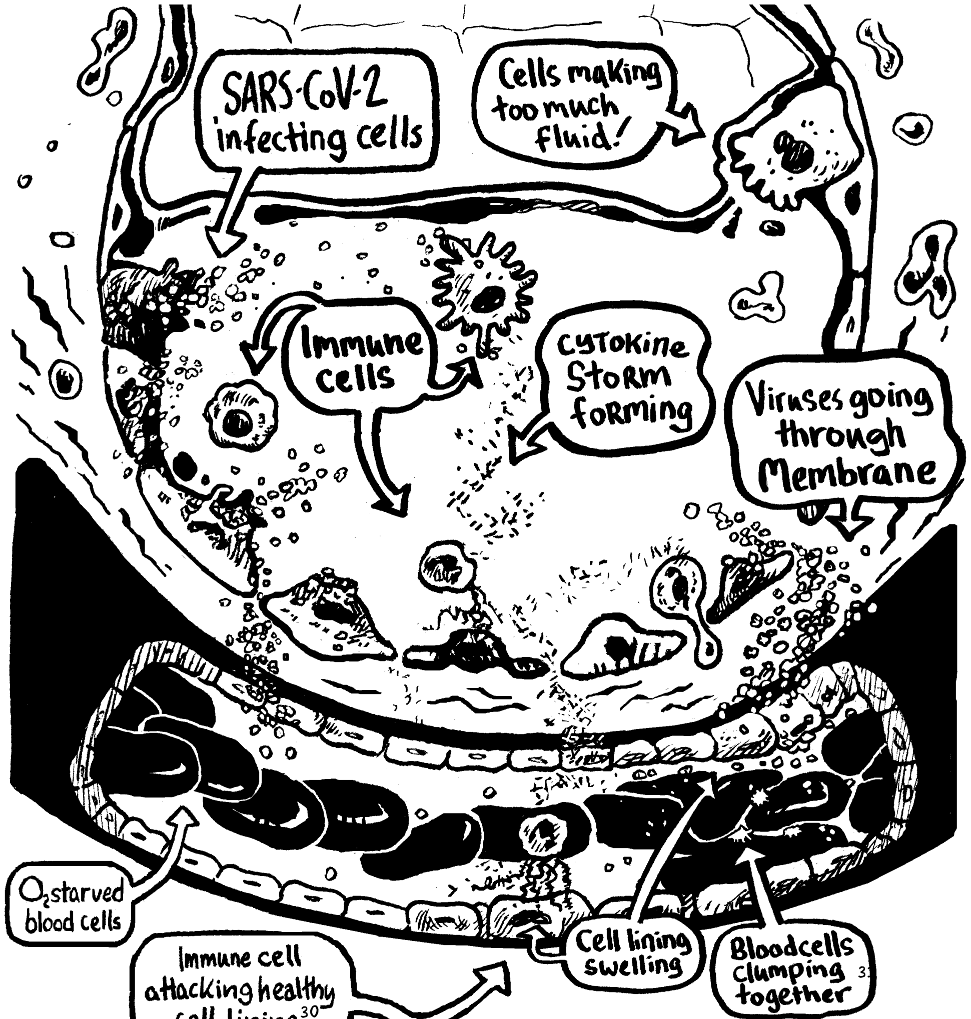
Your alveolar sacs are so small, in fact, that air molecules can squeeze through their outer SEMI-POROUS MEBRANES! Fresh O_2 (oxygen molecules) from the air swap places with the waste CO_2 (carbon dioxide) carried by capillaries on the surface, in a GAS EXCHANGE.

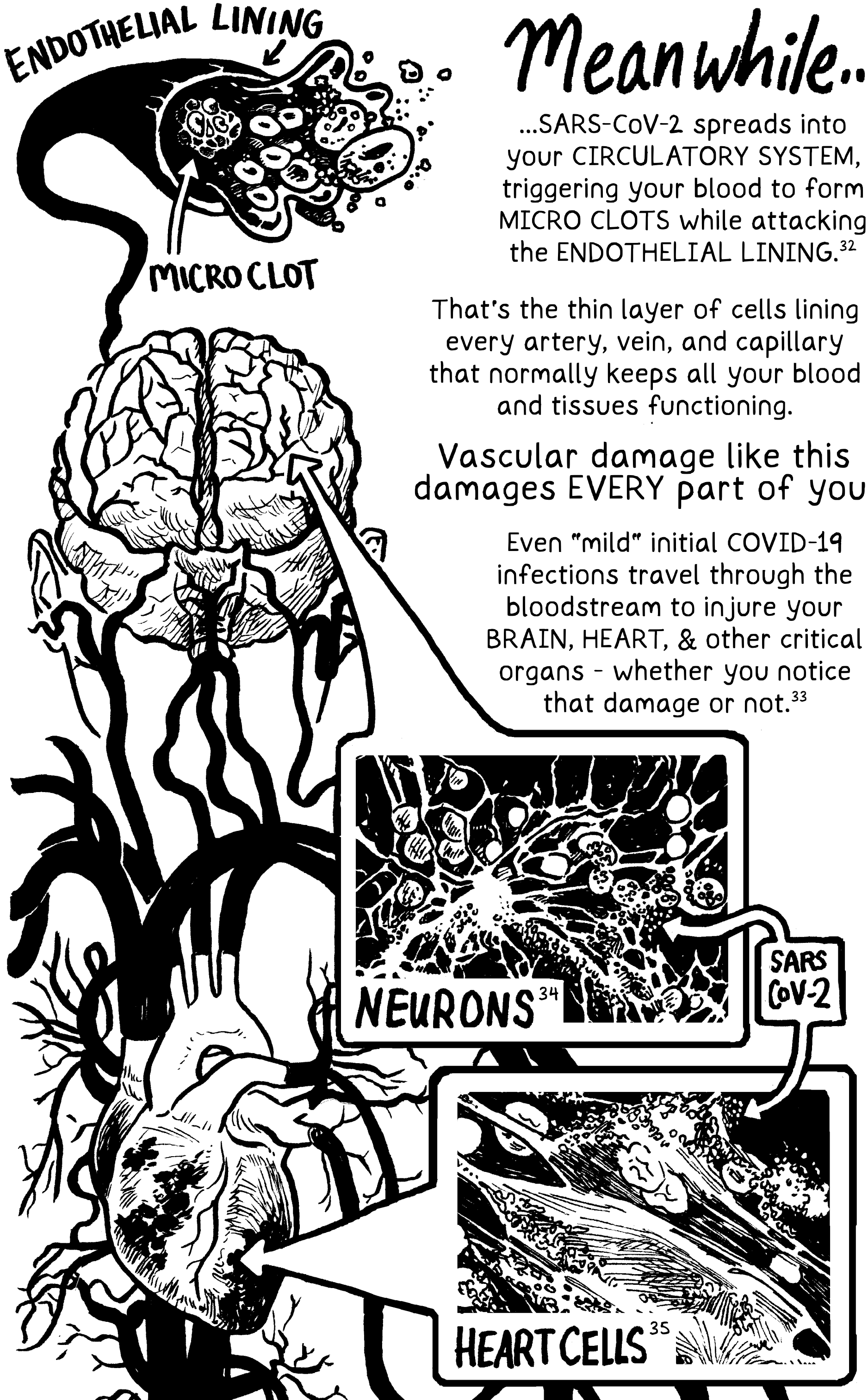
That's another reason why tiny aerosols are so dangerous...Their size allows them to shoot all the way through your lungs and into your alveoli. There, they take advantage of the gas exchange to slip inside your blood...![27]

Our body takes defensive action against SARS-CoV-2 with IMMUNE CELLS, but variants excel at turning our immune response against itself in escalating CYTOKINE STORMS.[28]

Infected, dying cells release CYTOKINES, or chemical signals that summon immune cells...But then those cells get attacked too, so they summon even MORE immune cells, & on & on...![29]

Your inflamed alveoli try to flush the invaders out with protective fluids, until they're swollen with pus. This causes a suffocating state called PNEUMONIA, where your infected alveolar sacs struggle to keep exchanging O_2CO_2 through their damaged walls. Without treatment, this can end in death.


SARS-CoV-2 infecting cells
Cells making too much fluid!
Immune cells
Cytokine Storm forming
Viruses going through Membrane
O_2 starved blood cells
Immune cell attacking healthy cell lining[30]
Cell lining swelling
Bloodcells clumping together 3


ENDOTHELIAL LINING
MICRO CLOT
NEURONS[34]
SARS CoV-2
HEART CELLS[35]

Meanwhile...

...SARS-CoV-2 spreads into your CIRCULATORY SYSTEM, triggering your blood to form MICRO CLOTS while attacking the ENDOTHELIAL LINING.[32]

That's the thin layer of cells lining every artery, vein, and capillary that normally keeps all your blood and tissues functioning.

Vascular damage like this damages EVERY part of you.

Even "mild" initial COVID-19 infections travel through the bloodstream to injure your BRAIN, HEART, & other critical organs - whether you notice that damage or not.[33]